State of California

M e m o r a n d u m

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From : Larry Week, Chief
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Subject : Policy Regarding Restorable Habitat and Watersheds for Fish

California Forest Practice Rules (FPRs) that became effective on July 1, 2000, (AT&I Rules@) place a greater emphasis on the Department of Fish and Game (Department) to determine whether planning watersheds or stream reaches within the Evolutionarily Significant Unit (ESU) are restorable for anadromous salmonids (see Title 14 California Code of Regulations [14 CCR] Section 895.1 "Watersheds with threatened or impaired values") and other fish [14 CCR 916.2(a) (2)]. The T&I Rules have resulted in increased requests from the Department of Forestry and Fire Protection, resource professionals, and landowners, to the Department for additional Timber Harvesting Plan (THP) watercourse inspections to determine whether specific streams or watersheds are restorable. Restorable habitat for fish includes Class I watercourses as defined in the FPRs. Restorable watersheds are those where access by anadromous salmonids is currently blocked by a temporary barrier. This memorandum is intended to provide policy guidance to Department staff for determining whether instream habitat and barriers to anadromous salmonids are restorable.

1. Habitat

An important consideration when designating streams as restorable for anadromous salmonids is whether the stream was historically occupied habitat. This consideration is established Department policy for steelhead. The Statewide Steelhead Restoration and Management Plan for California states (McEwan and Jackson 1996):

> "It is DFG's position that all streams that historically supported steelhead populations have the potential for restoration or reintroduction, and future land use planning decisions should not preclude that potential."

If historical data are not available, then suitable habitat that is not blocked by a natural total barrier should be considered restorable.

Habitat should be considered restorable if not presently suitable for all or a portion of fish life history stages, but that could become suitable through active or passive (natural) restoration. Active restoration includes, but is not limited to: restoring access, restoring adequate water quantity and quality, placing of properly sized large woody debris (LWD), reducing sediment, increasing habitat complexity, or making other improvements suitable for fish production.

Any stream that can be actively restored or will naturally recover should be deemed restorable. Many fish streams have been severely and repeatedly degraded for more than a century, and bear little resemblance to their original condition. Recovery must be viewed in the context of what will result from natural watershed processes in the absence of continued disturbance, regardless of the time required.

Stream reaches with sustained high gradients need to be carefully evaluated to determine their potential to either provide suitable habitat or to allow fish passage upstream to lower-gradient habitat reaches. Contemporary literature is not consistent with regard to reach gradient and length, as criteria to determine upper habitat limits differs for each species. The precise upstream limits of restorable habitat may not always be clear in the field. Determining these limits should be based on best professional judgment that integrates the following:

a) The length of the high-gradient reach;

b) Whether the high-gradient reach is sustained or stepped in a fashion to allow fish passage at present or can reasonably be expected to self-modify to allow fish passage in the future;

c) The quality and quantity of existing or restorable habitat above the high gradient reach; and

d) Site-specific conditions particular to that watershed, stream, and reach.

Department Timberland Planning environmental scientists should discuss with local Department fisheries biologists and fish habitat specialists the restorability of a stream. The Department environmental scientist responsible for reviewing the THP should then make the final determination of restorability and the extent of restorable Class I habitat based on these discussions and an evaluation of the stream in the field, while considering site-specific conditions.

2. Barriers

An important consideration when evaluating stream habitat restorability is to determine whether there are barriers to fish passage, and whether these barriers are restorable. Except in the cases of large dams, if a man-made barrier is blocking access to formerly occupied habitat, then it should be regarded as temporary and restorable. In any case, a stream reach above a barrier where fish at one time were present should be designated as Class I. In the absence of historical information on whether fish occurred above a barrier, if the barrier is not natural and there is reasonable expectation that in the absence of the barrier, suitable (now or after recovery) spawning, rearing, and/or overwintering habitat would be accessible, then the reach above the barrier must be recognized as Class I. It may take considerable time for the barrier to be naturally removed or altered to allow fish passage. Absence of data on fish presence above a confirmed barrier does not mean fish are absent. Resident fish can be assumed absent from a reach above a permanent (natural) barrier only if the watercourse naturally dries up completely or comprehensive electrofishing indicates absence.

Temporary barriers include, but are not limited to LWD pieces or log jams with or without sediment accumulations, in-stream landslide or torrent deposits, filled-in channels from historic logging, stream crossings (with or without culverts) that prohibit fish passage

(including crossings under the jurisdiction of cities, counties, state agencies and the federal government), agricultural diversions, and most small dams (where fishway construction or removal is technologically feasible). Many barriers are partial barriers, passing some species at some flows, while blocking others. Department barrier "nomenclature" should be applied where possible, e.g., "complete barrier at all flows" or "partial barrier for steelhead, complete barrier for coho, flow dependent" etc. Information on the experience and expertise of the Department environmental scientist, fisheries biologist, fish habitat specialist, or other qualified Department employee making the determination and its basis should be included in the Department=s report on the barrier.

Permanent non-restorable barriers include large dams (where fishway construction is not feasible), and natural barriers such as long term bed-rock falls and large, static, ancient slides with high-gradient or high-velocity barriers. As resources allow, the Department will conduct feasibility studies of fishway construction or dam removal before determining which dams are restorable for fish passage. However, even where dams are considered non-restorable, resident populations commonly occur in reservoirs and streams above the dams.

Department environmental scientists should consult Department fisheries biologists and/or fish habitat specialists when evaluating the barrier before presenting a finding. The following resources are among those that Department staff uses as guidance: Powers and Orsborn (1985) and Chapman (2002). Specifically, the Department considers 14 feet as the maximum leap height for steelhead (maximum leap height plus length of fish) when adequate hydraulic and geomorphic conditions exist (falls angle, plunge pool depth, etc.).

References:

Chapman, D.W. 2002. Performance limitations for salmon and steelhead at barriers. BioAnalysts, Inc. Eagle, ID. 20 pp.

McEwan, Dennis and Terry A. Jackson. 1996. Steelhead Restoration and Management Plan for California. Inland Fisheries Division, Department of Fish and Game, Sacramento. Unpubl. Report. 234 pp.

Powers, P.D. and J.F. Orsborn. 1985. Analysis of barriers to upstream fish migration, an investigation of the physical and biological conditions affecting fish passage success at culverts and waterfalls. Albrook Hydraulics Laboratory, Washington State University. Submitted to Bonneville Power Administration, Project No. 82-14. 102 pp.

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